

# PATENT ABSTRACTS OF JAPAN

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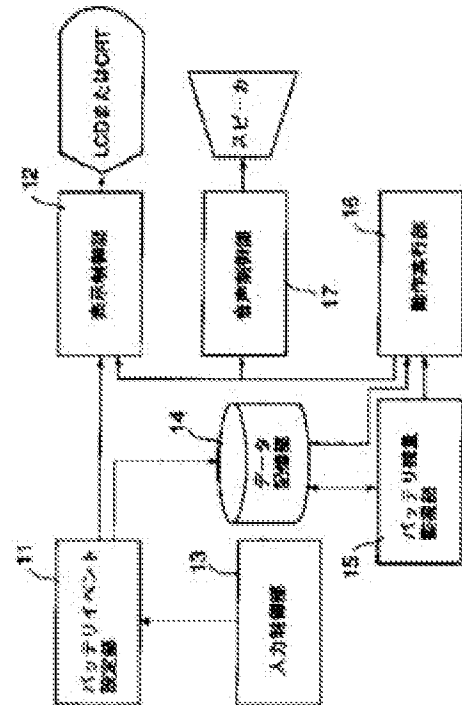
## (54) COMPUTER SYSTEM AND METHOD FOR MANAGING BATTERY EVENT

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a computer system capable of automatically executing processing desired by a user at each of plural optically designated battery residual power points.

SOLUTION: A battery event setting part 11 shows a battery event information setting image on a display controlling part 12, receives battery residual power points designated according to the setting image and a battery event to be generated through an input controlling part 13 and stores them as battery event information in a setting table of a data storing part 14. Meanwhile, a battery residual power monitoring part 15 monitors the change of battery residual power all the time and transfers the battery residual power to an

operation executing part 16 at the moment when the change is detected. Furthermore, the part 16 detects battery event information that makes the battery residual power a battery residual power point from the setting table and executes the battery event shown by the detected battery event information by using the part 12, a sound controlling part 17, etc.



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- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the battery event management method applied to the computer system and same system in which battery-operated is possible.

[0002]

[Description of the Prior Art]In recent years, the personal computer on condition of being used a place where one has gone, during movement, etc. in which battery-operated is possible is developed variously. Also in the not non-portable personal computer on condition of being carried, in order to continue processing while to some extent when the electric power supply from the outside is intercepted by interruption to service etc., are constituted by many so that battery-operated is possible.

[0003]And in the personal computer made possible, battery-operated [ this kind of ]. In order to lengthen continuous operation time at the time of battery-operated, when the data input from a keyboard etc. stops, for example exceeding predetermined time, it has various power saving functions [ say / switching off LCD etc. ].

[0004]

[Problem to be solved by the invention]By the way, as for a power saving function, when premised on battery-operated, it is preferred to have the function to perform automatically processing which checks the residue of the battery itself and for which a user asks independently according to the residue. However, in the former, for example for charge-and-discharge management of a battery, It has stopped to such an extent that a full charge state and a low battery state state are supervised, Also when starting a certain processing, even if it is a case where it is only what performs fixed processing beforehand defined, for example by the system, or arbitrary processings can be performed, It is considered as the opportunity of starting of only the only battery residual quantity point of the time of a low battery state beforehand defined by the system.

[0005]That is, two or more battery residual quantity points were chosen freely, for example, and performing processing for which a user asks at each of two or more of the selected battery residual quantity points was not able to be realized at all.

[0006]This invention is made in consideration of such the actual condition, and is a thing. The purpose is to provide the management method of the battery event applied to the computer system and same system which can perform automatically processing for which a user asks at two or more battery residual quantity points of each carried out.

[0007]

[Means for solving problem]In order to attain the purpose mentioned above, this invention, A battery event setting-out means to match and set up the event data to which the event which makes it generate is indicated to be residue point data in which the residue point of said battery is shown in the computer system in which battery-operated is possible, When the battery residual quantity acquired by the battery residual quantity acquisition means which acquires the residue of said battery, and said battery residual quantity acquisition means corresponds to the residue point data set up by said battery event setting-out means, A battery event generation means to generate the event shown by the event data matched with this corresponding residue point data is provided.

[0008]They are two or more battery residual quantity points which a user specifies arbitrarily in this invention, Reproduction of the voice data stored in the event for which a user asks, for example, the specified voice file, The message output of the text file stored in the specified text file, Or since starting of the application program stored in the specified program file etc. can be generated, it becomes possible to satisfy a demand of the user about system management flexibly.

[0009]While this invention makes said battery event setting-out means equipped with a means to set up whether said residue point data is validated when a battery state is in which state at the time of discharge and charge, Compute the difference of this battery residual quantity acquired by said battery residual quantity acquisition means by said battery event generation means, and the last battery residual quantity, and it is judged whether a battery state is in which state at the time of discharge and charge, It is made to make the means which validates only battery event information in which said set-up battery state and said judged battery state correspond have.

[0010]Since an event which is different in a time of reaching that battery residual quantity point by a time of reaching that battery residual quantity point by charge and discharge can be generated in this invention, for example even if it is the same battery residual quantity point, It becomes possible to respond finely by demand of a user about system management.

[0011]

[Mode for carrying out the invention]Hereafter, this embodiment of the invention is described, referring to Drawings.

[0012]Drawing 1 is a figure showing composition of a personal computer concerning an embodiment of this invention. As this personal computer is a computer system in which battery-operated [, such as a notebook type, ] is possible and is shown in drawing 1, for example, It has CPU1, the system memory 2, the magnetic disk drive (HDD) 3, the controller displays 4, the sound controller 5, the keyboard controller 6, the power control 7, and the battery 8.

[0013]CPU1 manages control of this whole computer system, and it carries out execution control of the various application programs including utilities, such as an operating system stored in the system memory 2, BIOS, and a device driver.

[0014]The system memory 2 is a memory device used as the main memory of this computer system, and stores the operating system in which execution control is carried out by CPU1, BIOS, various application programs, and the various data used for these execution.

[0015]The magnetic disk drive (HDD) 3 is a memory device used as the enternal memory

of this computer system, and stores the various programs loaded to the system memory 2, data, the various data outputted from the system memory 2, etc. The various programs etc. which were swapped out from the system memory 2 are stored temporarily.

[0016]The controller displays 4 are devices which manage the output of the user interface in this computer system, and display the indicative data which CPU1 draws on LCD, CRT, etc.

[0017]By decrypting the coded voice data and supplying a loudspeaker, the sound controller 5 reproduces voice data, or codes the sound inputted via the microphone and incorporates it in a computer system as voice data.

[0018]The keyboard controller 6 is a device which manages input of a user interface in this computer system, and is handed over to CPU1 via a register in which self is provided with control data transmitted from a keyboard or a mouse.

[0019]The power control (PSC) 7 controls a power supply of this computer system unitary, and performs a change of the electric power supply/interception of an external power (AC) and the battery 8, charge control of the battery 8, etc.

[0020]And the time of carrying, etc. are the power supplies which supply electric power for the computer system to operate, when an external power (AC) is not acquired, and the battery 8 is constituted by rechargeable battery with repeatable charge and discharge, for example.

[0021]Drawing 2 is a figure showing a functional block about battery event management of a computer system with such composition.

[0022]As shown in drawing 2, battery event management of this computer system is carried out by the battery event set part 11, the display control part 12, the input control part 13, the data storage part 14, the battery residual quantity Monitoring Department 15, the operation execution section 16, and the voice control part 17. Among these, the battery event set part 11, the battery residual quantity Monitoring Department 15, and the operation execution section 16 are realized by program which is stored in the system memory 2 and in which execution control is carried out by CPU1. the display control part 12 -- the controller displays 4 -- the input control part 13 corresponds to the keyboard controller 6, the data storage part 14 corresponds to the magnetic disk drive (HDD) 3, and the voice control part 17 corresponds to the sound controller 5, respectively.

[0023]Hereafter, the principle of operation about the battery event management of this computer system is explained.

[0024]First, the principle of operation at the time of setting out of battery event information is explained. If the battery event set part 11 is started, it will display a battery event information setting screen as shown in drawing 3 on the display control part 12. And the battery event set part 11 receives a user's contents of alter operation performed that battery event information should be set up along this setting screen via the input control part 13. Battery event information is what makes a group the event data in which the residue point data in which the residue point of a battery is shown, and the event which makes it generate are shown, and holds it, The battery event set part 11 is stored in the setting table of a format as is defined on the data storage part 14, for example, shows drawing 4 this battery event information.

[0025]A setting-out residue (a1) is a field for specifying the battery residual quantity point made into the opportunity which generates a battery event among drawing 3. This battery residual quantity point is specified with the rate value (%) to the residue at the

time of the full charge of a battery. And it is a field for specifying whether a battery state (a2) validates the specified battery residual quantity point, when a battery is in any of a discharge state and a charging state.

[0026]The file (a3) to reproduce is a field for specifying the sound outputted when the battery residual quantity point specified as the inside of the specified battery state is reached, and inputs the path in which the voice file which stores desired voice data is shown. The message (a4) to display is a field for specifying wording displayed as a message, when the battery residual quantity point specified as the inside of the specified battery state is reached, and it carries out the direct entry of the desired text.

[0027]Operation (a5) of a computer is a field for specifying the operation made to perform to a computer when the battery residual quantity point specified as the inside of the specified battery state is reached, "Nothing is done", a "hibernation", a "shutdown", etc. choose only one desired operation out of the operation beforehand prepared as a choice.

[0028]And the program (a6) to start is a field for specifying the program started when the battery residual quantity point specified as the inside of the specified battery state is reached, and inputs the path in which the program file which stores a desired application program is shown.

[0029]The message (a4) to reproduce and which is filed and (a3) displayed and the specification of each item of a program (a6) to start become independent to each, and are not specified as an exclusion selection target. It is considered that the item without an input is a thing without the specification. And multidata input is possible for the battery event information which holds each of these items, and the flag (a7) which shows each set-up battery residual quantity point is displayed on the indicator (a8) in which the present battery residual quantity is shown.

[0030]After each item is specified on this battery event information setting screen, when the setup instruction by the depression of the [O.K.] button or [application] button is made, the battery event set part 11, It stores in the setting table defined on the data storage part 14 by making these items into battery event information. As for this setting table, two of business exist at the time of business and discharge at the time of charge, and the battery event set part 11 stores this battery event information in either of two setting tables according to specification of a battery state (a2).

[0031]"Percentage()" during a format of a setting table shown in drawing 4 A battery residual quantity point, A path which a path which "Sound()" shows a voice file, and "Message()" show a text file, a parameter with which "Action()" shows operation of a computer, and "Application()" are the fields holding a path in which a program file is shown. Although the direct entry of the desired text is carried out on a setting screen as for wording of a message, the battery event set part 11 stores this in a text file created internally, and stores a path in which the created text file is shown in the "Message()" field.

[0032]Next, a principle of operation at the time of generating of a battery event is explained. If the battery residual quantity Monitoring Department 15 is requiring that that should be notified each time and receives a notice to that effect when change arises in battery residual quantity to an operating system of this computer system, It is required that the present battery residual quantity should be shortly notified to an operating system. Battery residual quantity returned according to this demand is a rate value to a

residue at the time of a full charge of a battery, and the battery residual quantity Monitoring Department 15 hands over this returned battery residual quantity to the operation execution section 16.

[0033]On the other hand, the operation execution section 16 which received this battery residual quantity measures the battery residual quantity and the received battery residual quantity of the last time which self held, and judges whether a battery is in a charging state, or it is in a discharge state. Here, when it is judged that it is in a charging state, the setting table of business is chosen at the time of charge, and it is searched whether the battery event information which considers battery residual quantity received to the setting table of business at the time of this charge as a battery residual quantity point exists. When similarly it is judged that it is in a discharge state, the setting table of business is chosen at the time of discharge, and it is searched whether the battery event information which considers battery residual quantity received to the setting table of business at the time of this discharge as a battery residual quantity point exists. And when the battery event information which considers received battery residual quantity as a battery residual quantity point is detected, the event specified by the battery event information is generated. . Make the voice control part 17 reproduce the voice data stored in the voice file specifically shown with the path held in the "Sound()" field. . Carry out the message indicator of the text data stored in the text file shown with the path held in the "Message()" field to the display control part 12. Processing of starting the application program stored in the program file shown with the path held in the "Application()" field is performed.

[0034]Here, with reference to drawing 5 and drawing 6, operation procedures about battery management of this computer system are explained.

[0035]Drawing 5 is a flow chart for explaining operation procedures at the time of setting out of battery event information.

[0036]First, the battery event set part 11 displays a battery event information setting screen on the display control part 12 (Step A1), and receives a user's contents of alter operation performed that battery event information should be set up along this setting screen via the input control part 13. When these received contents of alter operation are specification of the existing battery residual quantity point (YES of Step A2), the battery event set part 11, Specified battery event information is acquired from a setting table (step A3), and the acquired information is displayed on a battery event information setting screen (step A4). Designating operation of this existing battery residual quantity point is performed by carrying out the depression of the mouse button in the state where it doubled with a display position of a flag (a7 of drawing 3) which shows a battery residual quantity point of a request of a mouse cursor, for example etc.

[0037]When it is a depression of [application] button (NO of Step A2, YES of step A5), the battery event set part 11 stores in a setting table on the data storage part 14 battery event information specified on this battery event information setting screen (Step A6). At this time, the battery event set part 11 stands by the next alter operation, without closing this battery event information setting screen.

[0038]On the other hand, when it is a depression of the [O.K.] button, (NO of Step A2, NO of step A5, YES of Step A7), and the battery event set part 11, After storing in a setting table on the data storage part 14 battery event information specified on this battery event information setting screen (Step A8), this battery event information setting screen

is closed (step A9), and processing at the time of this battery event information setting out is terminated.

[0039]And when it is a depression of [cancellation] button (NO of Step A2, NO of step A5, NO of Step A7, YES of Step A10), The battery event set part 11 cancels specified battery event information, closes this battery event information setting screen (Step A11), and terminates processing at the time of this battery event information setting out.

[0040]Drawing 6 is a flow chart for explaining operation procedures at the time of generating of a battery event.

[0041]First, the operation execution section 16 acquires battery residual quantity from the battery residual quantity Monitoring Department 15, and stores it in an internal buffer (Step B1). And the last battery residual quantity stored in the internal buffer and battery residual quantity stored this time are measured, and it is judged whether a battery is in a charging state, or it is in a discharge state (step B-2).

[0042]Here, when it is judged that the operation execution section 16 is in a charging state, a setting table of business is chosen at the time of (YES of step B-2), and charge (Step B3), and when it is judged on the other hand that it is in a discharge state, a setting table of business is chosen at the time of (NO of step B-2), and discharge (step B4). And the operation execution section 16 searches whether battery event information which considers battery residual quantity received to the selected setting table as a battery residual quantity point exists (step B5).

[0043]When battery event information which considers received battery residual quantity as a battery residual quantity point is detected (YES of step B5), the operation execution section 16, It judges whether there is any specification of voice response (step B6), and when there is specification of voice response, the voice control part 17 is made to perform (YES of step B6), and reproduction of a specified voice file (Step B7). It judges whether the operation execution section 16 has specification of a message indicator (Step B8), and when there is specification of a message indicator, the display control part 12 is made to perform (YES of Step B8), and a display of a specified text file (Step B9). It judges whether the operation execution section 16 has specification of application starting (Step B10), and when there is specification of application starting, (YES of Step B10) and a specified program file are started (Step B11).

[0044]Thus, in a computer system of this embodiment, it becomes possible to generate automatically battery events, such as voice response, a message indicator, and a program startup, on two or more battery residual quantity points specified arbitrarily.

[0045]

[Effect of the Invention]As explained in full detail above, according to this invention, a user makes a desired sound output at arbitrary battery residual quantity points, display a desired message, or, Or it becomes possible to make a system perform automatically various processings [ say / starting a desired application program ].

[0046]Since the same battery residual quantity point can be distinguished and specified by the case where the inside of the case where the inside of a charging state is arrived at, and a discharge state is arrived at, For example, when a certain battery residual quantity point is reached by discharge supposing the case where the server computer connected with two or more client computers is obliged to battery-operated by interruption to service etc., The application program for notifying a demand receptionist stop is started automatically by the client computer, When a battery residual quantity point equivalent to

the battery residual quantity point which the electric power supply from the outside was resumed and was mentioned above by charge on the other hand is reached, Namely, even if the electric power supply from the outside stops again, when only the battery residual quantity which can notify a demand receptionist stop is secured, Employment that the application program for notifying a demand receptionist start is started automatically by the client computer etc. is also attained.

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[Translation done.]